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An account of the genus Noeetomima, with descriptions of new species from Queensland and Nepal (Diptera: Lauxaniidae)

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SYNOPSIS

The characters of the genus *Noeetomima* Enderlein are described; diagnostic features are given for the type-species *radiata* End., and the new species *parva* and *nepalensis* are described on specimens from Queensland and Nepal respectively.

INTRODUCTION

The lauxaniid genus *Noeetomima* Enderlein (1937) has up till now contained only its type-species, *radiata* End., described on a unique male from China. There seems to have been no subsequent reference to the genus until I included it in a key to the Old World genera of Lauxaniidae and gave additional generic characters derived from the holotype of *radiata* and two undescribed species (Stuckenberg, 1971: 558–9). In this paper I am summarizing anew the characters of *Noeetomima*, presenting a diagnosis for its type-species, and describing the two new ones.

The new species from Nepal, named below *nepalensis*, is closely related to *radiata*. The other new one, from Queensland, named below as *parva*, differs in many features from the two Asiatic species, as might be expected in view of its geographic remoteness.

I am grateful to Mr. B. H. Cogan of the British Museum (N.H.), London, for the loan of the material of *nepalensis*, and to Dr. T. E. Woodward of the University of Queensland, for the loan of a large collection of Australian Lauxaniidae in which the specimen of *parva* was discovered. Thanks are due to Dr. H. Schumann of the Humboldt University Zoological Museum, for the loan of the holotype of *radiata*. This study was made in part during the tenure of a Senior Bursary from the Council for Scientific and Industrial Research, for which grateful acknowledgement is made.

Terms and abbreviations are the same as those used in my earlier paper (Stuckenberg, 1971: 500–4).

Genus *Noeetomima* Enderlein

Noeetomima Enderlein, 1937, *Mitt. Dtsch. ent. Ges.* 7: 73; Stuckenberg, 1971, *Ann. Natal Mus.* **20** (3): 558–9. Type-species, by monotypy, *N. radiata* Enderlein loc. cit.

Generic characters: Small to very small lauxaniids, known wing length in range 2,7–3,9 mm. Costa sapromyziform; 1+3 *acr* and *dc* bristles, these surrounded by brown spots; mesopleuron with a downsloped bristle a little below centre, and some stiff setulae or small bristles above, sometimes a smaller second discal *mp* bristle dorsal to the one described; scutellar bristles almost erect; tergal marginal bristles erect or almost so, in some species very strong and laterally flattened. Scutellum somewhat rounded and swollen, contrastingly glossy and dark brown. Frons with four longitudinal stripes—a subparallel median pair which diverge on each side of ocellar triangle (see Stuckenberg, 1971: fig. 51), and the two orbital plates which are conspicuously darkly coloured. Apical portion of vein M_{1+2} arched, first posterior cell thus narrowed preapically; a short apical section of R_{2+3} bent forwards, submarginal cell thus widened apically (see figs. 2–4). Wing with intricate pattern a feature of which is the presence of abundant milky-white streaks, those in peripheral cells elongate and radiating inwards. Male abdomen (this sex not yet known in *parva*) distinctive in that protandrium (compounded sclerotic components of segments 7 and 8) is large, setose, completely exposed, downsloped and fused with epandrium.

Other features of the chaetation are: both pairs *or* reclinate; *oc* well-developed, proclinate; *pvt* cruciate; mesonotum with some small, bristle-like setulae in addition to the macrochaetae, these sparsely and irregularly scattered on anterior part, also a few in an irregular *ia* series, and a pair on line between *ph* and second *dc*; *pp* strong, 2 *st*; F1 without *av* comb; *d* preapical present on all T; T2 with one *v* spur; veins without bristles.

The only genus likely to be confused with *Noeetomima* is *Trypaneoides* Tonnoir & Malloch, which is sympatric in Australia at least and contains species which are deceptively similar to those of *Noeetomima* in being small and rather darkly patterned, with heavily patterned wings and an almost identical suite of chaetic characters. However, all species of *Trypaneoides* that I have seen have a homoneuriform costa and thus can quickly and decisively be distinguished; they also differ obviously in having a pruinose scutellum and a blotched instead of streaked wing pattern, in lacking the peculiarities of the second and fourth veins described above, and in the male having the protandrium free of the epandrium.

Noeetomima radiata Enderlein

Noeetomima radiata Enderlein, 1937, *Mitt. Dtsch. ent. Ges.* **7**: 73–4. Stuckenberg, 1971, *Ann. Natal Mus.* **20** (3): 559.

Diagnostic characters: Most similar to *nepalensis* described below, distinguished from that species by the dark arista, unpatterned scutellum, almost evenly curved and not undulant posterior edge of the wing, and presence of three *av* bristles on the apical half of F3. Obviously differing from *parva* described below in having a fronto-facial angle, in many details of wing pattern, larger size, abdominal pattern and chaetation of F3.

Description (♂): Enderlein's description may be augmented as follows—face only slightly keeled, narrowly visible in lateral view (Stuckenberg, op. cit.: fig. 52), fronto-facial angle developed almost as a right-angle, less prominent than in *nepalensis.* Eye somewhat irregularly quadrate and obliquely positioned. Third antennal segment narrowly rounded apically, arista very dark brown, short-haired, with slight but definite taper; first antennal segment exposed, with three minute dorsal setulae; antennae obviously separated (Stuckenberg, op cit.: fig. 51). Median pair of brown stripes on frons markedly diverging over their posterior third only; orbital plates darker brown and narrower than median stripes, pale strip between orbital plate and median stripe asymmetrically narrowed posteriorly and becoming grey before vertex.

Mesonotum greyish with sepia tinge; a strong sepia-brown spot surrounding each *dc* and *acr* bristle, the bristle always near anterior end of spot; posterior edge of mesonotum with two intensely dark brownish marks narrowly confluent in midline, extending irregularly forwards between *dc* and *acr* rows but not attaining level of hindmost bristle in each of these rows. Scutellum glossy dark brown, with minute hairs thinly scattered, these best seen in dorsal view and not apparent in posterior view, no pattern present. An incomplete and slightly irregular row of *ia* setulae; righthand *acr* row with a small bristle between prescutellar and normal second *acr* bristles. F3 with three *av* bristles on apical half.

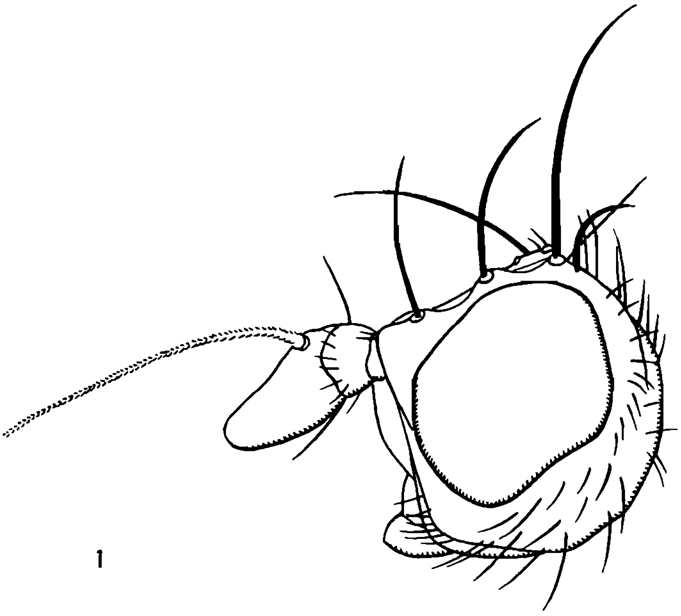

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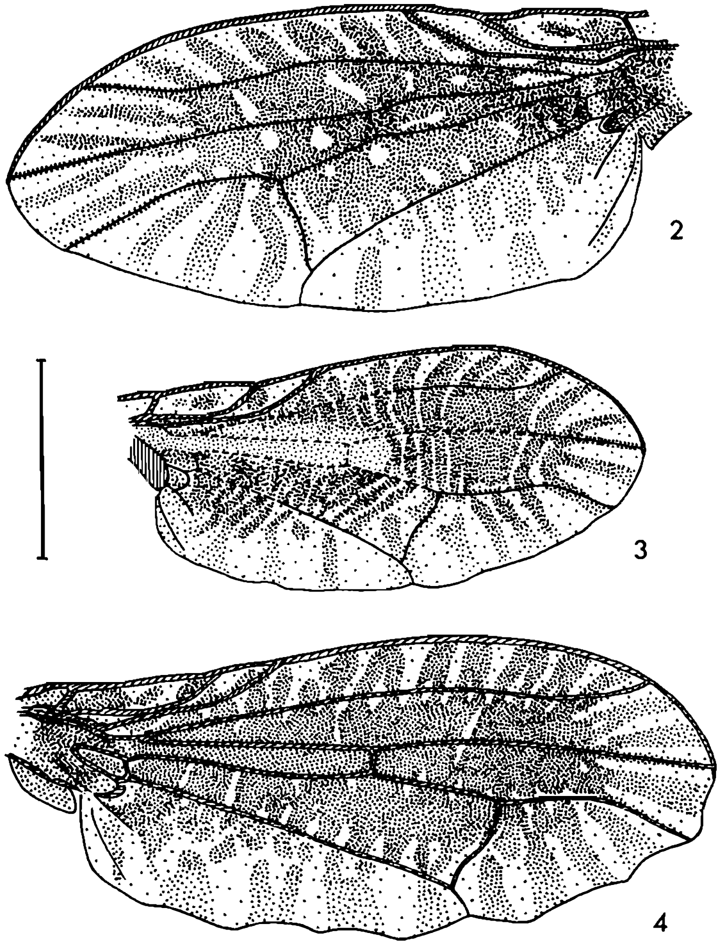
Fig. 1. Head of *Noeetomima nepalensis* n. sp.

Tergal marginal bristles conspicuously erect and large, laterally flattened but not unusually broad, those on sides of tergites stronger and larger than those on dorsum; in addition, there are erect, much smaller but stiff bristles, these tending on tergites 4–6 to an arrangement in transverse, subbasal row.

Genitalia not dissected; protandrium large, exposed, about $1\frac{1}{2}\times$ as long as tergite 6, obviously fused with epandrium, with three irregular rows of small bristles.

Wing as in fig. 2, length 3,5 mm; posterior margin almost evenly curved; pattern constituted as in *nepalensis* but differing in various details (see under that species).

Material examined: Holotype ♂, CHINA, Mandschuria, Charbin, 17.7.1935 (coll. W. Alin); in Zoologisches Museum der Humboldt-Universität, Berlin, DDR.



Figs. 2–4. Wings of *Noeetomima* spp., (2) *radiata* End. holotype, (3) *parva* n. sp. holotype, (4) *nepalensis* n. sp. paratype. The common scale line represents 1 mm.

Noeetomima nepalensis n. sp.

Diagnostic characters: A species similar in size and appearance to *radiata*, but differing in several obvious features: arista white, scutellum patterned by a narrow median and on each side a small sublateral basal spot of pruinescence, hind margin of wing undulant, F3 with two *av* bristles. The facial keel, protruding fronto-facial angle, different wing pattern, larger size, generally stronger macrochaetae and darker colouring easily distinguish the species from *parva*.

Description (♂♀): Head as in fig. 1; frons almost flat, slightly concave centrally, narrowing a little anteriorly, at its midlength slightly wider than long; a definite fronto-facial angle present, protruding ahead of eye; face with a shallow keel over a little more than upper half. Eye irregularly quadrate and somewhat obliquely positioned. Third antennal segment more elongate than in other species; arista whitish, elongate, very short haired, tapering very slightly; first segment exposed, with three or four minute dorsal setulae; antennae relatively close together, second segments almost touching on inner faces. Median pair of brown stripes on frons diverging over posterior half in direction of *vti*; pale strip between median stripe and orbital plate tapering at posterior end and terminating about midway between *post or* and *vti.* Face pale greyish pruinose, patterned in brown by a narrow, arcuate mark transversely above epistome and an irregular chevron in middle; genae and parafacials almost concolorous, latter yellow-tinged, three irregular brownish marks present, two on parafacial and third on anterior part of gena. Proboscis dull amber. Antennae mainly dull, pale creamy, third segment narrowly bordered with brown. Median pair of frontal stripes light brownish, orbital plates dark brown, ocellar triangle and space between *vti* and *post or* greyish, remainder of frons dull, pale yellowish.

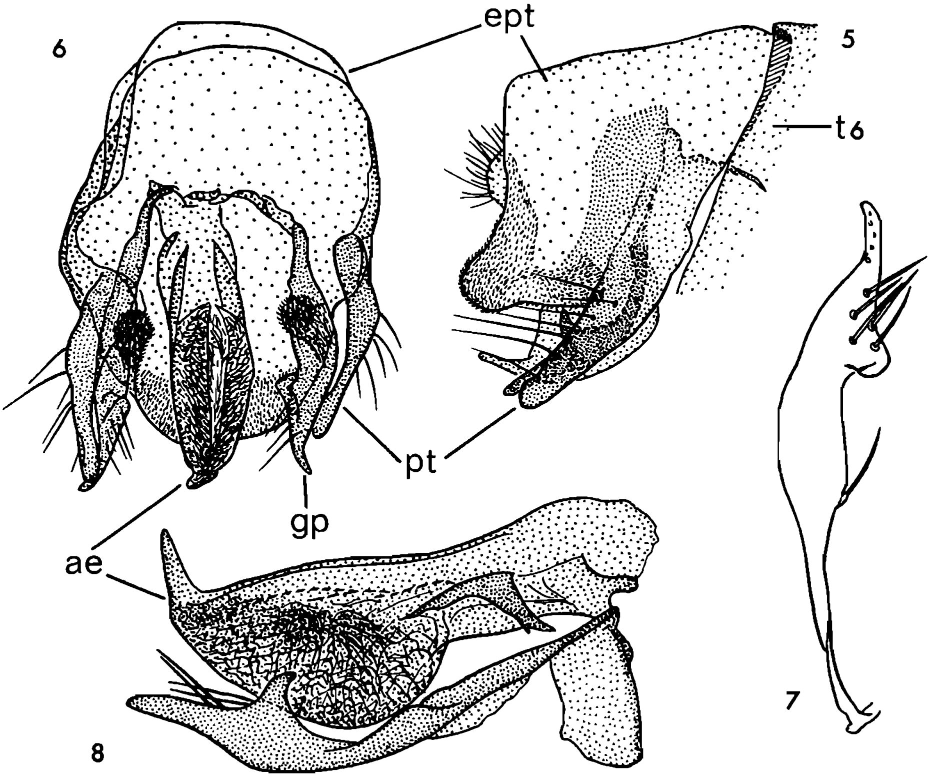
Mesonotum greyish-pruinose, a strong sepia tinge present except on anterior declivous part; each of *acr* and *dc* bristles surrounded by a strong sepia-brown spot broadly suboval in shape, in each case the bristle placed near anterior end of spot; anteriormost pair of *acr* spots continued onto declivous anterior face of mesonotum by two narrow, concolorous lines; irregular brownish marks also present as follows—adjacent to humeral callus and extending obliquely and almost linearly to a dilated termination between presutural and first postsutural *dc* bristles, at base of *ph* bristle, around upper end of transverse suture, on postsutural declivity below *sa* bristle, and in *ia* position; at posterior edge of mesonotum is a pair of prescutellar dark brown spots. Pleura thinly greyish-pruinose with irregular brownish marks which are somewhat indefinite except for a subrectangular mark in depression at junction of pteropleuron and pleurotergite. Scutellum shining dark brown with sparse, minute hairs and a pattern comprising three greyish-brown pruinose patches, a median one in form of an elongate triangle tapering posteriorly and terminating at about middle of scutellum, and a sublateral spot on each side continuing onto ridge confluent with postalar callus. Legs and halteres dull, pale yellowish, latter with brownish infusion on knob.

Abdomen of male dark sepia-brown on tergites up to and including fourth, paler on hind margin of fifth, tergite 6, entire protandrium and epandrium tawny-yellow; female similar but retractable segments after sixth are dull yellowish; in both sexes a conspicuous pattern of greyish spots, these hardly apparent on dorsum except for sublateral spots near hind margin of tergite 1+2 and portions of spots laterally, the downcurved lateral parts of tergites up to the sixth with two subrectangular greyish spots on each side.

Tergal marginal bristles erect, long, strong, laterally flattened, giving the abdomen a well-armed, spiny appearance. F3 with two *av* bristles on distal half. Fused protandrium and epandrium of male with three irregular rows of stiff, strong, erect bristles.

Male genitalia as in figs. 5–8; noteworthy features (probably generic) are the fused protandrium and epandrium (ept), lateral extension of this which apparently is part of the protandrium only (pt), and the close application of the gonopod (gp) to the inner surface of pt; possible specific features are the distinctive shape of the gonopod and dorsally-directed apical point on the aedeagus (ae).

Wing as in fig. 4, length ♂♂ 2,9–3,4, ♀♀ 3,2–3,9 (mean of five ♀♀ 3,6) mm. Pattern



Figs. 5–8. Male genitalia of *Noeetomima nepalensis* n. sp., paratype; (5) lateral and (6) anteroventra views of hypopygium, (7) gonopod in dorsal view, (8) aedeagus with gonopod, lateral view. Abbreviations are—ae = aedeagus, ept = fused epandrium and protandrium, gp = gonopod, pt = lateral extension of protandrium, t6 = sixth tergite.

formed by clumping of microtrichia as well as staining of membrane where these are densely aggregated; most clear spaces contain areas which appear milky-white in oblique lighting, these especially pronounced in marginal, costal and subcostal cells, also at apex of submarginal and first posterior cells, these whitish marks contributing much to the pattern of radiating streaks typical of the wing; microtrichia absent in strongly whitish marks, in less strongly white ones like those in hind part of wing the microtrichia are very small and evenly but sparsely distributed. Hind margin obviously undulant up to apex of third vein. Some features of the pattern which distinguish this species from *radiata* are—one instead of two dark streaks in apex of first posterior cell and four instead of three in second posterior cell, no clear mark in second basal cell, enclosed clear marks much smaller in submarginal cell and basal half of first posterior cell.

Material examined: Holotype ♀, 3 ♂ 3 ♀ paratypes, NEPAL, Ulleri, 1 800–2 100 m, 19.5.1954; 1 ♀ paratype, NEPAL, 3 km SE. Sikha, 2 100–2 440 m, 23.5.1954 (all coll. J. Quinlan); British Museum (N.H.) Nepal Expedition, BM 1954–540. Holotype and paratypes in British Museum, except 1 ♂ 1 ♀ in Natal Museum.

Noeetomima parva n. sp.

Diagnostic characters: This Australian species differs patently from the two Asiatic ones in its general appearance, wing and abdominal patterns, and smaller size. Noteworthy distinguishing details are the almost flat face, lack of a projecting fronto-facial angle, single *av* bristle on F3, glabrous scutellum, thin, unflattened tergal marginal bristles, pale orange streak in the wing, and bicoloured abdomen. The body form is generally conservative, and the generic and specific characters are in the chaetation, venation and wing and frontal patterns.

Description (♀): Head as in fig. 9; face almost flat, not visible in lateral view; frons slightly convergent anteriorly, its length about 80% of its width at midlength; frons and face meeting obtusely, no projecting fronto-facial angle present. Eye more rounded than in other species. Third antennal segment relatively shorter and much more rounded than in other species; arista dark brown, its hairs sparse and very short; first segment largely concealed, with two minute dorsal setulae; antennae fairly close together but second segments clearly separated. Median pair of frontal stripes only a little divergent posteriorly, separating to accommodate ocellar triangle, terminating at vertex; pale strip between dark brown orbital plate and median stripe attains vertex with only a slight decrease in width. Face pale, dull yellowish with two poorly defined pale brownish marks. Antennae almost unicolorous pale yellowish-orange, palps and proboscis almost concolorous. Frons pale creamy-yellow apart from brownish median stripes and darker brown orbital plates. Ocellar tubercle greyish.

Mesonotum light greyish-pruinose with pale sepia tinge, some pale yellowish infusion

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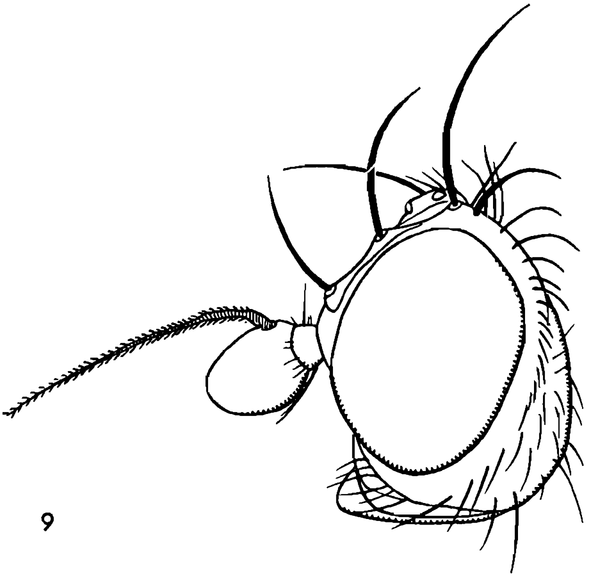

Fig. 9. Head of *Noeetomima parva* n. sp.

on notopleural and humeral calli; each *dc* and *acr* bristle on a pale sepia spot which is relatively smaller and less conspicuous than in the other species, those in *acr* series smaller than *dc* series; concolorous spots present also at base of *ph, sa* and some small bristles in *ia* row, also a narrow sublateral vitta to anterior face of mesonotum from between anteriormost *dc* and *acr* bristles, and a mark above humeral callus; the strong prescutellar marks present in other species are represented by less intense, relatively larger but less sharply defined sepia patches of irregular form with narrow entension between posterior *pa* and hindmost *dc*. Pleura light brownish with thin whitish-grey pruinescence, propleuron and area around mesothoracic spiracle creamy-yellow; pale brown marks on mesopleuron and sternopleuron, a more intense mark in depression where pteropleuron and pleurotergite meet. Legs of pale straw colour; F3 with small, brown mark ventrally near the single *av* bristle. Scutellum dark brown, shining, glabrous, unpatterned apart from a faint, paler brown median mark most obvious at apex, apparently internal.

Abdomen bicoloured, tergites 1+2, 3 and 4 yellowish with three definite and a fourth indefinite brown marginal mark on each side, tergite 1+2 in addition with some irregular brownish blotching; remainder of abdomen shining blackish-brown, tergite 5 (which is broadly exposed) with three hind marginal yellowish spots on dorsum, of which median is twice as large as laterals, and two on hind margin of downcurved lateral parts of this tergite. Sternites and pleural membrane yellowish.

Macrochaetae generally smaller and weaker than in other species; abdominal bristles numerous, almost erect, but slender and not laterally flattened, those on dorsum diverging away from midline.

Wing as in fig. 3, length 2,7 mm. Hind margin slightly undulant up to apex of third vein. Construction of pattern basically as in the other two species but pattern itself differing in many details; a pale orange streak occupies all of first basal cell, basal part of discal cell, adjacent narrow strip of submarginal cell and very narrow strip in discal cell; pattern otherwise differing essentially in that there are narrow, whitish streaks continuous across submarginal, first posterior and discal cells creating a more complex and interrupted pattern.

Material examined: Holotype ♀, QUEENSLAND, Brisbane, 26.4.1948 (coll. F. Kleinschmidt). In the collection of the Department of Entomology, University of Queensland.

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